

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



Academic Program and Course Description Guide for Undergraduate Studies

2025-2026

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة واسط

الكلية/المعهد: كلية التربية للعلوم الصرفة

القسم العلمي: قسم الرياضيات

اسم البرنامج الأكاديمي أو المهني: بكالوريوس تربية رياضيات

اسم الشهادة النهائية: بكالوريوس تربية في الرياضيات

النظام الدراسي: سنوي

تاريخ اعداد الوصف: 2025-10-13

تاريخ ملء الملف: 2025-10-13



التوقيع :

اسم معاوني العلمي: أ.م.د. عمار عواد كاظم

التاريخ : 2025-3-10



التوقيع : **ظاهر والي فريح**

اسم رئيس القسم: أ.د. ظاهر والي فريح

التاريخ : 2025-10-13

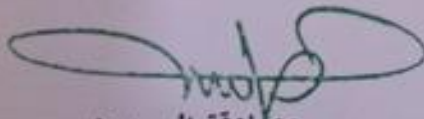
دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.د. سجي حسين دلفي

التاريخ : 2026 / 3 / 10

التوقيع



مصادقة السيد العميد

أ.د. علي حسين شجاع

٢٠٢٦ / ٣ / ١٠

1. Program Vision

To be a distinguished undergraduate mathematics program that prepares competent mathematics graduates with strong academic, educational, and research capabilities, contributing to excellence in mathematics education, scientific development, and community service.

2. Program Mission

The Mathematics Undergraduate Program is committed to:

- Providing high-quality education in pure and applied mathematics supported by effective teaching and modern educational practices.
- Preparing qualified mathematics teachers and professionals with strong analytical, critical thinking, and problem-solving skills.
- Promoting research, innovation, and the integration of technology in mathematics education and practice.
- Encouraging ethical values, lifelong learning, and community engagement to meet the needs of schools and society.

3. Program Objectives

1. **Demonstrate Mathematical Competence:** Apply fundamental and advanced mathematical concepts to analyze and solve theoretical and real-world problems.
2. **Excel in Mathematics Education:** Effectively teach mathematics using learner-centered instructional strategies, appropriate assessment methods, and educational technologies.
3. **Apply Research Skills:** Conduct and utilize educational and mathematical research to improve teaching, learning, and professional practice.
4. **Use Technology Effectively:** Employ modern computational tools and digital technologies in mathematics instruction, problem solving, and research.

5. **Communicate and Collaborate:** Communicate mathematical ideas clearly and work effectively with students, colleagues, and multidisciplinary teams.
6. **Demonstrate Professionalism and Ethics:** Uphold ethical standards, professional responsibility, and respect for diversity in educational and professional settings.
7. **Engage in Lifelong Learning:** Pursue continuous professional development, advanced studies, and lifelong learning to adapt to developments in mathematics and education.
8. **Serve Society:** Contribute to educational improvement and community development through the application of mathematical knowledge and professional expertise.

4. Program Accreditation

Conditional programmatic accreditation was obtained for the Department of Mathematics, in accordance with Ministerial Order No. 1305-18476 dated February 16, 2026.

5. Other external influences

Is there a sponsor for the program?

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	38	168	%100	Specialized+optinal
College Requirements	21	60	%35.8	Specialized
Department Requirements	17	101	%61.3	Specialized+optinal
Summer Training	1	3	%1.8	Specialized
Other	1	2	%1.1	Specialized

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours		
			Theoretical	Practical	Tutorial
first stage		Mathematical Foundations	3		2
first stage		Calculus	2		2
first stage		Linear Algebra	2		2
first stage		Introduction to Computer Science		2	
first stage		Theoretical Physics	2		
first stage		Educational Psychology	2		
first stage		Human Rights and Democracy	1		
first stage		Arabic Language	2		
first stage		Foundations of Education	2		
first stage		English Language	1		
Second stage		Advanced Calculus	3		2
Second stage		Ordinary Differential Equations	2		2
Second stage		Abstract Algebra	2		1
Second stage		Systems of Axioms and Geometry	2		1
Second stage		Curriculum and Textbook	2		
Second stage		Advanced Computer Science		2	
Second stage		Learn to Think	2		
Second stage		Educational Management	2		
Second stage		English Language	1		
Second stage		Arabic Language	1		
Second stage		Crimes of the Ba'ath Party	1		
Third stage		Mathematical Analysis	2		2
Third stage		Statistics and Probability	2		2
Third stage		Partial Differential Equations	2		1
Third stage		Ring Theory	2		2
Third stage		Numerical Analysis	2	2	
Third stage		Curriculum and Teaching Methods	3		
Third stage		Guidance and Mental Health	2		
Fourth stage		General Topology	2		2
Fourth stage		Complex Analysis	2		2
Fourth stage		Mathematical Statistics	2		2

Fourth stage		Graduation Project			2
Fourth stage		Fuzzy Mathematics	2		2
Fourth stage		Applied Mathematics	2		2
Fourth stage		Measurement and Evaluation	2		
Fourth stage		Observation and Application	1	2	

8. Expected learning outcomes of the program

Knowledge	
A1: Technical knowledge in the field of mathematics sciences. A2: Understanding computer programs and practical applications related to mathematical applications. A3: Teamwork and communication skills. A4: Equipping students with teaching skills, educational guidance, and classroom management.	A1: Providing students with a deep understanding in various fields of mathematics, both theoretical and applied, such as calculus, matrices, differential equations, numerical analysis, topology, and others. A2: Equipping students with a comprehensive understanding of computer programs used in mathematics, such as MATLAB, Mathematica, CAP, and Maple. A3: Developing students' teamwork and collaboration skills through forming groups to participate in solving assignments given by instructors. A4: Supplying students with necessary information about teaching strategies, methods, and techniques, and imparting teaching skills such as planning, execution, evaluation, and time management.
Skills	
B1: Developing problem-solving skills in mathematics. B2: Enhancing the mathematical skills possessed by the student. B3: Mastering modern teaching techniques.	B1: It includes the ability of students to solve mathematical problems and explore new ideas and modern methods for solving mathematical problems. B2: We aim to develop students' cognitive abilities by offering diverse subjects within the mathematics department and by linking mathematical concepts with other disciplines such as engineering, medicine, finance, and others. B3: Modern teaching techniques encompass a variety of strategies and technologies aimed at enhancing the learning experience and promoting student engagement.
Ethics	

J1: Adherence to professional ethics. J2: Commitment to electronic values. J3: Integrity and ethics. J4: Knowledge and learning	J1: Students are encouraged to understand and apply professional ethical values in the field of information technology and computer science, such as honesty, respect, responsibility, privacy protection, and security. J2: Students should refrain from spying on others, maintain confidentiality of information, and refrain from harming others by spreading harmful viruses. J3: The program emphasizes the promotion of ethical values and integrity in the field of computer science, teaching students the importance of ethical rules and proper conduct in the field of technology. J4: The program enhances the value of knowledge and learning by providing an educational environment that encourages the acquisition of knowledge and the development of skills in various areas of computer science.
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9. Teaching and Learning Strategies

The strategies and teaching methods adopted in implementing the program include:

1. Lecture method supported by the use of technology in learning.
2. Discussion method.
3. Active learning, including problem-based learning.
4. Cooperative learning.

10. Evaluation methods

1. Monthly exams.
2. Daily quizzes.
3. Group projects.
4. Reports.
5. Progress report cards

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Prof. Dr. Ali Hussein Shuaa	mathematics	Applied mathematics			yes	
Prof. Dr. Ali Khalaf Hussain	Mathematics				yes	
Prof. Dr. Basim Nasih Aboud	Mathematics	Numerical Analysis			yes	
Prof. Dr. Daher Waly Freh	Mathematics	Algebraic Topology			yes	
Assoc. Prof. Dr. Nasreen Najm Abd	Mathematics	Applied Mathematics			yes	
Assoc. Prof. Dr. Ahmed Shahab Hamad	Mathematics	Numerical Analysis			yes	
Assoc. Prof. Dr. Haitham Aboud Shahad	Mathematics	Abstract Algebra			yes	
Lect. Dr. Nada Mareeh Azeeb	Mathematics	Functional Analysis			yes	
Assoc. Prof. Dr. Aqeel Jasim Noor	Mathematics	Pure Mathematics			yes	
Assoc. Prof. Dr Saad Mahdi Jaber	Mathematics	General Topology			yes	
Lect. Walid Mahmoud Waleed	Mathematics	Mathematics			yes	
Lect. Saad Abdulhasan Younis	Mathematics	Mathematics			yes	
Lect. Aqeel Rahim Husun	Accounting	Financial Accounting			yes	
Lect. Thaer Najm Aboud	Accounting	Financial Accounting			yes	
Lect. Saad Ubaid Jameel	Statistics	Applied Statistics			yes	
Asst. Lect. Waleed abdalkhder khnjer	Mathematics	Integral Equations			yes	
Asst. Lect. Ali Khalifa Haji	Mathematics	Mathematics			yes	
Asst. Lect. Ghofran Muna Ajeimi	Mathematics	Mathematics			yes	
Asst. Lect. Zainab Jaafar Abdulrazzaq	Mathematics	Mathematics			yes	
Asst. Lect. Noor Naman	Mathematics	Mathematics			yes	
Asst. Lect. Naba Abraham Kadhm	Mathematics	Mathematics			yes	
Asst. Lect. Kawthar Qasim Sahan	Arabic Language	Arabic Language			yes	

Professional Development
Mentoring new faculty members
1- Development and Training Programs 2- Guidance and Mentoring Programs 3- Participation in Professional Learning Communities 4- Academic Counseling
Professional development of faculty members
1- Needs Analysis 2- Implementation of Training Programs and Workshops 3- Application of Modern Teaching Strategies 4- Monitoring and Performance Evaluation 5- Feedback Evaluation and Support
12. Acceptance Criterion
1. central admission 2. Parallel Admission 3. Admission for Top Teachers

13. The most important sources of information about the program
• Sectorial Committee • Ministerial Committees for Curriculum Development • University and College Website • Ministry of Higher Education and Scientific Research Website

14. Program Development Plan
Applying accreditation standards for educational colleges.

Program Skills Outline															
				Required program Learning outcomes											
Year/ Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First	101 MFM	Mathematical Foundations	Basic	√	√	√		√	√	√		√	√	√	√
	102 MC	Calculus	Basic	√	√	√	√	√		√	√	√		√	√
	103 MLA	Linear Algebra	Basic	√	√	√		√	√		√		√	√	√
	106 MCO	Introduction to Computer Science	Basic					√	√	√	√	√	√	√	√
	104 MPH	Theoretical Physics	Basic					√	√	√	√	√	√	√	√
	109 MEP	Educational Psychology	Basic									√	√	√	√
	107 MHR	Human Rights and Democracy	Basic									√	√	√	√
	108 MAR	Arabic Language	Basic									√	√	√	√
	105 MFE	Foundations of Education	Basic									√	√	√	√
	112MEL	English Language	Basic									√	√	√	√
	213MAC	Advanced Calculus	Basic	√	√		√	√	√	√	√	√	√	√	√

Second	216MODE	Ordinary Differential Equations	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	214MGT	Abstract Algebra	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	215MSAG	Systems of Axioms and Geometry	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	217MFSR	Curriculum and Textbook	Basic					√	√	√	√	√	√	√	√
	218MCO	Advanced Computer Science	Basic					√	√	√	√	√	√	√	√
	221MDP	Developmental Psychology	Basic									√	√	√	√
	219MEA	Educational Management	Basic									√	√	√	√
	222MEL	English Language	Basic									√	√	√	√
	223MAL	Arabic Language	Basic									√	√	√	√
	220MCBI	Crimes of the Ba'ath Party	Basic									√	√	√	√
Third	323MMA	Mathematical Analysis	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	325MPS	Statistics and Probability	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	326MPDE	Partial Differential Equations	Basic	√	√	√	√	√	√	√	√	√	√	√	√

	327MRG	Ring Theory	Basic	√		√	√		√	√		√	√		√
	324MNA	Numerical Analysis	Basic	√	√		√	√	√		√	√		√	√
	329MCT	Curriculum and Teaching Methods	Basic	√	√		√		√	√		√	√		√
	328MPC	Guidance and Mental Health	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Fourth	431MGT	General Topology	Basic	√		√	√	√		√	√		√	√	√
	432MCA	Complex Analysis	Basic	√		√		√	√		√	√		√	√
	433MMS	Mathematical Statistics	Basic									√	√	√	√
	435MRP	Graduation Project	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	438MFM	Fuzzy Mathematics	Basic	√		√	√		√	√		√	√		√
	437MAM	Applied Mathematics	Optional	√	√		√	√	√		√	√		√	√
	434MME	Measurement and Evaluation	Optional	√	√		√		√	√		√	√		√
	436MPE	Observation and Application	Basic	√	√	√	√	√	√	√	√	√	√	√	√

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

1. Course name:					
Foundation Mathematics					
2. Course code:					
3. Semester/year: 2025-2026					
Annual system / first stage					
4. the date this description was prepared:					
2025/9/1					
5. Available forms of attendance:					
Actual mandatory attendance					
6. Number of study hours (total)/number of units (total)					
150 hour					
7. Name of the course administrator (if more than one name is mentioned)					
Lecture Muhamed Ali Wanas					
8. Course objectives					
Course Objectives 1. To introduce students to the fundamental concepts of mathematical logic. 2. To develop the ability to understand and write mathematical proofs. 3. To acquire skills in working with sets, relations, and functions. 4. To build a solid foundation for studying advanced mathematics courses.					
9. Teaching and Learning Strategies					
Teaching and Learning Strategies A. Knowledge and Understanding A1. Understanding the fundamentals of mathematical logic and logical statements. A2. Comprehending the concepts of set theory, relations, and functions. B. Mental Skills B1. Analyzing mathematical problems using logical reasoning. B2. Distinguishing between different types of proofs (direct, by contradiction, by induction). C. Professional Skills C1. Writing a mathematical proof accurately and systematically. C2. Applying abstract concepts to mathematical problems. D. General Skills D1. Developing critical thinking and problem-solving skills. D2. Individual and group work in solving exercises.					
10. Course structure					
Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	Week

Class Activities	Lecture	Logic And Proof	A1+A2	2+2	1
=		Type3:Two- Direction Proof		=	2
Class Activities		Type4:Proof By Contrapositive		=	3
=		Type3: Proof involve		=	4
Class Activities	Lecture	Quantifires		=	5
=		Type4:Proof By Cases	B1+B2	=	6
=		Basic notation of set theory		=	7
Midterm Exam	Lecture	example			
=		Set operation		=	8
=		Extended Set operation		=	9
=	=	Venn diagram		=	10
=		Cartesian products and relation	C1+C2		
=		Relation		=	11
=	Lecture	Relation			
=		Relation		=	12
=	=	Relation	B2+C2	=	13
=		Equivalence relation		=	
=		Equivalence classes Upper and		=	14
=	Lecture	lower bounds		=	15
=		Relation		=	16
=		Function	B2+D1	=	17
	=			=	18
		Function		=	19
		Function		=	
			D1+D2		20
		Functions and relations		=	
		Constructions of function			21
		Surjective and injective	C2+D2		22-25
		function			
		Induced set function	D2		25-30

11. Course evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)
- **60 points:** Final Exam

12. learning and teaching resources

Required textbooks (curricular books, if any)

1-Lecture Notes in Foundation of Mathematics

2-اسس الرياضيات تأليف أ. د. هادي جابر مصطفى

Main references (sources)

- [1] Rubin, J. E., Set Theory for the Mathematician, San Francisco, Holden-Day, 1966.
- [2]. Slupecki, J. and L. Borkowski, Elements of Mathematical Logic and Set Theory, Oxford, Pergamon Press, 1967.
- [3] Monk, J. D., Introduction to Set Theory, New York, McGraw-Hill, 1969.
- [4] Quine, W. V., Mathematical Logic, Cambridge, Mass., Harvard University Press, 1951.

Recommended books and references (scientific journals, reports...)

<https://www.youtube.com/watch?v=gWs9j64uLns&list=PLtVAoURHJlM-em3la0NpAeRlhZjvuB>

Electronic References, Websites

1. Course Name:					
Calculus					
2. Course Code:					
3. Semester / Year: semester					
2025-2026					
4. Description Preparation Date:					
30/01/2025					
5. Available Attendance Forms:					
In-person and online attendance					
6. Number of Credit Hours (Total) / Number of Units (Total) :					
150 hour (8 units)					
7. Course administrator's name:					
Lecture Weldan waleed Muhamed					
8. Course Objectives					
Make the student able to: 1. Qualifying and training the student and teaching him regular differentiation and integration 2. Qualifying and training the student and teaching him the importance of mathematical applications of differentiation and integration 3. Preparing and teaching the student to benefit from calculus in the academic subjects of the advanced stages, including advanced calculus in the second stage and solving ordinary and differential equations in the second and third stages. 4. Helping the student in linking calculus to other topics in other stages					
9. Teaching and Learning Strategies					
CLO1: Define basic concepts CLO2: Prove properties CLO3: Compute integrals CLO4: Solving difficult problems using scientific material CLO5: Apply in research					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	CLO1+ CLO2	Introduction	Lecture	Class Activities
2-5	3	CLO1+ CLO2	Functions and their Algebra	Lecture	Class Activities
6-9	3	CLO1+ CLO2	Limits and Continuity	Lecture	Class Activities
10-12	3	CLO1+ CLO2	Differentiation	Lecture	Class Activities
13-14	3	CLO3	Applications of	Lecture	Class Activities

			Differentiations		
15-17	3	CLO3	Trigonometric and Hyper trigonometric Functions	Lecture	Class Activities
18-20	3	CLO3	Inverse Trigonometric Functions, Exponential and Logarithmic Functions	Lecture	Class Activities
21-23	3	CLO5+ CLO2	Exam	=	Midterm Exam
24-26	3	CLO4	Methods of Integrations	=	Assignments
27-28	3	CLO4	Applications of Integrations	=	Assignments
29-30	3	CLO3+ CLO4	Methods of Integrations	=	Assignments+ Class Activities
11. Course Evaluation					
The total grade is 100 points, distributed as follows: • 40 points: Coursework (assignments, participation, quizzes, midterm exam) • 60 points: Final Exam					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any) 1. H. L. Royden, <i>Real Analysis</i>, 4th Edition. 2. Gerald B. Folland, <i>Real Analysis: Modern Techniques and Their Applications</i>.					
Main references (sources) 1. Measure theory by Halmose 2. Measure Lebesgue integral and Hilbert space by A. N. Kolmogorove and S. V. Famin					
Recommended books and references (scientific journals, reports...)			LEBESGUE MEASURE and INTEGRATION		
Electronic References, Websites					

1. Course Name:					
Arabic language					
2. Course Code:					
3. Semester / Year:					
2025 -2026					
4. Description Preparation Date:					
2025 /3/3					
5. Available Attendance Forms:					
Actual mandatory attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours					
7. Course administrator's name (mention all, if more than one name)					
Name: Kawthar Qasim Sahn Email:kawthard402@gmail.com					
8. Course Objectives					
Course Objectives It aims to contribute to the formation of teachers who have competence, ability, good linguistic and scientific performance, and active scientific practice.					
9. Teaching and Learning Strategies					
Strategy CLO1: Introducing the student to the correct Arabic language words, their correct structures and methods in an interesting and attractive way. CLO2: Enabling the student to read correctly, CLO3: Ability to use the language correctly in communicating with others, such as speed, quality of delivery, and good expression.					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
8-1	1	CLO1+ CLO2	The accusative ones object The effect is with him Effect for it Absolute effect	Explanation and discussion	Exams and daily discussion
16-9	1	CLO1+ CLO2	Common linguistic errors	Explanation and discussion	Exams and daily discussion
22 -17	1	CLO3	Writing the dā' and ḍā' Rules for writing numbers	Explanation and discussion	Exams and daily discussion

27 -23	1	CLO3	Linguistic differences -The difference between rain and rain The difference between an oath and an oath The difference between light and light The difference between obligation and duty	Explanation and discussion	Exams and daily discussion
30 -28	1	CLO3	Poetic texts For the jeweler	Explanation and discussion	Exams and daily discussion

11. Course evaluation
Daily discussion to determine the extent of students' understanding Daily exams with various short scientific questions to understand the extent of their understanding of the material and to evaluate the daily contributions Request immediate participation by students Daily exams, monthly exams for the curriculum 40%, and the final exam 60%
12. Learning and teaching resources
General Arabic language for non-specialists/Dr. Kazem Hamad
The language of the Arabs and learning the rules of parsing and literature/Siddiq Ismail Hafez

1. Course Name:					
Partial Differential Equation					
2. Course Code:					
3. Semester / Year:					
2025–2026 Yearly					
4. Description Preparation Date:					
30/ 2 /2025					
5. Available Attendance Forms:					
Actual mandatory attendance					
6. Number of Credit Hours (Total) / Number of Units (Total) :					
90 theoretical hours					
7. Course administrator's name (mention all, if more than one name)					
Ass. Lec . Ali Khalefa Hagi Email: alihagi@uowasit.edu.iq					
8. Course Objectives					
Course Objectives •The student’s knowledge of partial differential equations and basic concepts and their classification • Find methods to solve partial differential equations . • Use Laplace and Fourier transforms to solve PDE . • Solve the heat conduction equation . • Students skills that enable them to teach mathematics .					
9. Teaching and Learning Strategies					
Strategy CLO1: Explaining the study material while asking students continuous and short questions . CLO2: Conduct monthly and tests . CLO3: Evaluate students by solving questions .					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	CLO1+ CLO2	Methods of Solving partialDifferential Equations	Explanation + discussion	General questions and discussion
2	3	CLO1+ CLO2	Methods of Solving Differential Equations	Explanation + discussion	General questions and discussion and practical tests
3	3	CLO3	Methods of Solving partial Differential Equations	Explanation + discussion	General questions and discussion

4	3	CLO3	Methods of Solving Homogeneous Differential Equations	Explanation + discussion	General questions and discussion
5	3	CLO3	Methods of Solving Homogeneous Differential Equations	Explanation + discussion	test
6	3	CLO1+ CLO2	Methods of Solving Homogeneous Differential Equations	Explanation + discussion	General questions and discussion
7	3	CLO1+ CLO2	Methods of Solving Homogeneous Differential Equations	Explanation + discussion	General questions and discussion
8	3	CLO3	Methods for solving non homogeneous equations with constant coefficients	Explanation + discussion	General questions and discussion
9	3	CLO3	Methods for solving non homogeneous equations with constant coefficients	Explanation + discussion	General questions and discussion
10	3	CLO3	Methods for solving non homogeneous equations with constant coefficients	Explanation + discussion	General questions and discussion
11	3	CLO1+ CLO2	Methods for solving non homogeneous equations with constant coefficients	Explanation + discussion	General questions and discussion
12	3	CLO1+ CLO2	Fourier series and transformations	Explanation + discussion	General questions and discussion
13	3	CLO3	Fourier series and transformations	Explanation + discussion	General questions and discussion
14	3	CLO3	Fourier series and transformations	Explanation + discussion	General questions and discussion
15	3	CLO1+ CLO2	Fourier series and transformations	Explanation + discussion	General questions and discussion
16	3	CLO1+ CLO2	Fourier series and transformations	Explanation + discussion	General questions and discussion
17	3	CLO3	One dimension Heat equation	Explanation + discussion	General questions and discussion
18	3	CLO3	One dimension Heat equation	Explanation + discussion	General questions and discussion
19	3	CLO3	One dimension Heat equation	Explanation + discussion	discussion
20	3	CLO1+ CLO2	One dimension Heat equation	Explanation + discussion	discussion

21	3	CLO1+ CLO2	One dimension Heat equation	Explanation + discussion	discussion
22	3	CLO3	Laplace Equation	Explanation + discussion	discussion
23	3	CLO3	Laplace Equation	Explanation + discussion	discussion
24	3	CLO3	Laplace Equation	Explanation + discussion	discussion
25	3	CLO1+ CLO2	Laplace Equation	Explanation + discussion	discussion
26	3	CLO1+ CLO2	Laplace Equation	Explanation + discussion	discussion
27	3	CLO3	Laplace Equation	Explanation + discussion	discussion
28	3	CLO3	Numerical solutions of partial differential equations	Explanation + discussion	discussion
29	3	CLO3	Numerical solutions of partial differential equations	Explanation + discussion	discussion
30	3	CLO1+ CLO2	Numerical solutions of partial differential equations	Explanation + discussion	

11. Course Evaluation

- The annual course of 40 is divided into 15 marks for the practical subject and 25 marks for the theoretical subject, including 10 marks for the totals of projects and the daily.
- Final out of 60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	"The Internet of things Connecting "
Main references (sources)	The Internet of things: Key Application and Protocols
Recommended books and references (scientific journals, reports...)	Foundation Elements an IoT Solution
Electronic References, Websites	https://www.techtarget.com

1. Course Name:					
Linear algebra					
2. Course Code:					
3. Semester / Year:					
2025/2026					
1- Description Preparation Date:					
2025/9/1					
2- Available Attendance Forms:					
Self attendance					
3- Number of Credit Hours (Total) / Number of Units (Total) :					
120 hours per year and 6 units per week					
4- Course administrator's name (mention all, if more than one name)					
Name: Assist. Lect. Waleed Abdal Khader					
5- Course Objectives					
Course Objectives The students acquire special skills in solving problems related to matrices and linear systems The students acquire skills in solving problems related to vector space The students acquire general skills in teaching mathematics					
6- Teaching and Learning Strategies					
Strategy CLO1: Interactive lectures supported by multimedia presentations. CLO2: Problem-solving sessions emphasizing matrix operations and vector spaces. CLO3: Guided classroom discussions to encourage mathematical reasoning. CLO4: Collaborative learning through group activities and peer instruction. CLO5: Computer-based demonstrations using mathematical software (e.g., MATLAB, GeoGebra, or Python). CLOS6: Tutorials and office hours for individualized academic support.					
7- Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	CLO1+ CLO2	Mathematical Induction	Using the pen and board and data show	Exams and quick exams and assignments
2					
3	4	CLO1+ CLO2	Matrices		
4	4				
5	2	CLO1+CLO2			
6	2				
7		CLO3	The Rank of Matrices		
8	2				
9	4	CLO3	Determinant		
10	4				

11					
12	4	CLO1+ CLO2	Determinant		
13	4				
	4				
14	4		Determinant		
15	4				
16	4		Linear Equations		
17	4				
19	4	CLO3+ CLO2	Linear Equations		
20	4				
21	4				
		CLO2+ CLO4	Linear Equations		
22	4				
23	4				
		CLO5+ CLO4	Vector Space		
24	4				
		CLO5+ CLO6	Linear Mapping		
25	4				
26	4		eigen Value and Eigen		
27	2		Vectors		
28	2				
29	2				
			eigen Value and Eigen		
30	2		Vectors		

8– Course Evaluation

- The annual course of 40 is divided into 15 marks for the practical subject and 25 marks for the theoretical subject, including 10 marks for the totals of projects and the daily.
- Final out of 60

9– Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Introductory for linear algebra w applications
Recommended books and references (scientific journals, reports...)	First course in Matrices
Electronic References, Websites	https://matrixcalc.org https://www.symbolab.com/solver/system-of-equations-calculator

1. Course Name:					
General physics					
2. Course Code:					
3. Semester / Year:					
2025- 2026					
4. Description Preparation Date:					
2025/9/1					
5. Available Attendance Forms:					
My attendance is mandatory					
6. Number of Credit Hours (Total) / Number of Units (2)					
60 hours 2 hours					
7. Course administrator's name (mention all, if more than one name)					
Lecturer Dr.Fatima Fadhil Abais					
8. Course Objectives					
Course Objectives Students are familiarized with the general and specific principles of classical mechanics in motion and its types, along with the interpretation of the laws related to it. • Providing students with the scientific skills to deal with mechanical problems and how to benefit from and deal with them in different situations. • Explain and illustrate real-life examples of classical mechanics. • Urging students to possess scientific information related to mechanics and apply it now and in the future when faced with any problem. • Urging students to acquire various modern teaching skills in explaining mechanical topics and thus acquiring Experience in dealing with various physics topics					
9. Teaching and Learning Strategies					
Strategy CLO1: Giving scientific lectures on understanding classical mechanics CLO2: Oral and short exams through discussion examples related to the topic CLO3: Written exams to refine what students have learned. CLO4: Classical mechanics describes the motion of very small (microscopic) bodies from the beginning Projectiles include machines and astronomical objects such as planets, galaxies, spaceships, and stars. CLO5: Study Newton's laws of motion CLO6: The study of the behavior of most “natural” things.					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	CLO1+ CLO2	Measurements and movement in one dimension	My presence	General questions, discussion, and problem solving
2	3	CLO1+ CLO2	Movement is in one dimension	My presence	General questions and discussion or exam
3	3	CLO1+ CLO2	Vector and scalar quantities	My presence	General questions,

					discussion, and problem solving
4	3	CLO1+ CLO2	Numerical and vector multiplication	My presence	oral test
5	3	CLO3	Motion in two dimensions and derivation of its laws	My presence	General questions and problem solving
6	3	CLO3	Movement in two dimensions	My presence	solving equations
7	3	CLO3	evaluation	My presence	Monthly in all previous lessons
8	3	CLO5+ CLO2	Definition and derivation of Newton's laws	My presence	oral test
9	3	CLO4	Friction and applied frictional forces	My presence	oral test
10	3	CLO4+ CLO3	Circular motion	My presence	Solve related issues
11	3	CLO5	Circular motion	My presence	Complete the solution of related issues
12	3	CLO5	Work and energy	My presence	Solve related issues
13	3	CLO4+ CLO5	Law of conservation of energy	My presence	Solve related issues
14	3	CLO3+ CLO4	Linear momentum, thrust, and collisions	My presence	Solve related issues
15	3	CLO4+ CLO5	Linear momentum, thrust, and collisions	My presence	Complete the topic and solve the problems
16	3	CLO5+ CLO2	evaluation	My presence	A monthly exam in all previous subjects
17	3	CLO6+ CLO2	Rotary movement	My presence	Solve related issues
18	3	CLO6+ CLO5	Rotary movement	My presence	Solve related issues
19	3	CLO6+ CLO4	Rotary movement	My presence	Solve related issues
20	3	CLO6+ CLO3	evaluation	My presence	A monthly exam in all previous subjects

11. Course Evaluation

- The annual course of 40 is divided into 15 marks for the practical subject and 25 marks for the theoretical subject, including 10 marks for the totals of projects and the daily.
- Final out of 60

12. Learning and Teaching Resources

1 - Classical Mechanics for Physics Graduate Students , ERNESTO CORINALDESI , 1998 . 2 - Classical Mechanics , R. DOUGLAS and GOREGE , 2006 .	Required prescribed books (Methodology, if any)
1 - Physics for Scientists and Engineers with modern physics , SERWAY and JEWETT , 9 Edition , 2014 . 2- University Physics by Francis W. Sears, Mark W.	Main references (sources)

Zemanseky and Hugh D. Young, 1982. 3- Introduction to Physics by Jojn D.Cutnell, Kenneth W.Johnson 8th Ed.,2010	
1- Classical Mechanics by Herbert Goldstein, 2002. 2- Classical Mechanics by Michael Cohen, 2014. 3- Classical Mechanics by Mahmoud Hamza Dahi, 2020.	Recommended supporting books and references (scientific journals, reports....
1- Educational Physics Network 2- Al-Farid website in physics 3- NASA website in Arabic for physics	electronic references, Internet sites

1. Course Name:	Human Rights and Democratic
2. Course Code:	
3. Semester / Year:	2026/2025
4. Description Preparation Date:	2025/9/1
5. Available Attendance Forms:	Mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)	90hours
7. Course administrator's name (mention all, if more than one name)	Name: Asst.Prof Dr.Nisreen Falah
8. Course Objectives	
Course Objectives Cognitive objectives 1–The student will be able to define human rights, define their goals, and human rights in ancient	

civilizations in particular

(Mesopotamian civilization)

2- The student explained the psychological and philosophical foundations, then his definition of human rights and the ancient, medieval, and modern ages.

3- Introducing the student to the close relationship between guidance and the school, how he is the guiding teacher, and what his characteristics are

The student must explain the need for guidance programs in the school

4- Learn about human rights at the level of non-governmental organizations and civil society institutions, the International Committee of the Red Cross

9. Teaching and Learning Strategies

Strategy

CLO1: Interactive Discussions – Encourage students to discuss human rights issues, share opinions, and respect different perspectives.

CLO2: Case Studies – Use real-life examples of human rights challenges to help learners analyze situations and propose solutions.

CLO3: Role-Playing and Simulations – Have students act out scenarios such as court cases, conflict resolution, or community decision-making to build empathy and problem-solving skills.

CLO4: Collaborative Learning – Organize group projects and teamwork to explore human rights topics and develop communication skills.

CLO5: Problem-Based Learning – Present human rights issues and ask students to research causes, impacts, and possible solutions.

CLO6: Debates – Engage students in structured debates on current human rights issues to strengthen critical thinking and respectful argumentation.

CLO7: Community Engagement – Encourage participation in community service, awareness campaigns, or partnerships with local organizations to connect learning with real-life action.

CLO8: Multimedia Resources – Use documentaries, videos, podcasts, photographs, and digital platforms to make human rights concepts more engaging and relevant.

CLO9: Reflective Activities – Ask students to keep journals or write reflections on what they have learned and how human rights relate to their own lives.

CLO10: Rights-Based Classroom Environment – Foster a classroom culture based on respect, inclusion, equality, participation, and non-discrimination, allowing students to experience human rights principles in practice.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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1	3	CLO1+ CLO2	A general introduction to human rights	Explanation	General
2	3	CLO1+ CLO2	Human rights in ancient civilization	and	questions
3	3	CLO1+CLO2	Human rights in Greek and Roman	discussion	and
4	3	CLO3	civilizations		discussion
5	3	CLO3	Human rights in the old sieges of Iraq		
6	3	CLO1+ CLO2	Human rights in heavenly religions		
7	3	CLO3+ CLO2	Human rights resources		
8	3	CLO2+ CLO4	National sources for human rights		
9	3	CLO5+ CLO4	International human rights sources		
10	3	CLO5+ CLO6	Constitution of the Republic of Iraq of 2005		
11	3	CLO1+ CLO2	The role of regional organizations in protecting human rights		
12	3	CLO1+ CLO2	Human rights guarantees at the international level		
13	3	CLO1+CLO2	International treaties and their protection of human rights		
14	3	CLO3	democracy		
15	3	CLO1+ CLO2	Forms of democracy		
16	3	CLO3+ CLO2	Direct democracy		
17	3	CLO2+ CLO4	semi-direct democracy		
18	3	CLO5+ CLO4	Electoral lists.		
19	3	CLO5+ CLO6			
20	3	CLO6+ CLO3			
21	3	CLO6+ CLO4			
22	3	CLO7+CLO5			
23	3	CLO7			
24	3	CLO8			
25	3	CLO7+ CLO8			
26	3	CLO6+ CLO8			
27	3	CLO8+ CLO9			
28	3	CLO8+ CLO9			
29	3	CLO9+ CLO10			
30	3				

11. Course Evaluation

- The annual course of 40 is divided into 15 marks for the practical subject and 25 marks for the theoretical subject, including 10 marks for the totals of projects and the daily.
- Final out of 60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Dr.. Maher Saleh Allawi Al-Jubouri	Dr.. Riad Aziz Hadi Dr.. Ali Abdul Razzaq Muhammad
Dr.. Hassan Muhammad Shafiq	Dr.. Raad Naji Al-Jeddah
Electronic References, Websites	

1. Course Name:					
Group Theory					
2. Course Code:					
3. Semester / Year:					
2025/2026					
4. Description Preparation Date:					
2025/9/1					
5. Available Attendance Forms:					
Attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3 hours / 4 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Haithab Abood Sahad					
Email: hshahad@uowasit.edu.iq					
8. Course Objectives					
Course Objectives - Understand the fundamental concepts of groups, subgroups, and group operations. - Identify and prove basic properties and theorems of groups. - Analyze cyclic groups, permutation groups, and cosets. - Apply important theorems such as Lagrange's Theorem and the Isomorphism Theorems. - Construct and recognize homomorphisms and isomorphisms between groups. - Solve mathematical problems using group-theoretic methods. - Develop logical reasoning, proof-writing, and abstract thinking skills. - Recognize applications of group theory in mathematics, physics, chemistry, and computer science..					
9. Teaching and Learning Strategies					
CLO1: nteractive lectures to introduce definitions, theorems, and proofs. CLO2: Problem-solving sessions where students work on exercises individually and in groups. CLO3: Collaborative learning through group discussions and peer instruction. CLO4: Proof-based learning to strengthen mathematical reasoning and writing skills. CLO5: Inquiry-based learning by encouraging students to discover patterns and formulate conjectures. CLO6: Tutorials and workshops for guided practice on challenging topics. CLO7: Technology-assisted learning using mathematical software (such as SageMath or GAP) to explore group structures and computations. CLO8: Student presentations on selected topics or applications of group theory. CLO9: Formative assessments including quizzes, assignments, and classroom activities with feedback. CLO10: Summative assessments through midterm examinations, final examinations, and project work.					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Groups	Lecture Notes	Daily quizzes
2	3	CLO1+ CLO2	Definition		Assignments
3	3		Example and General Properties of Qroups and some Remarks	Lecture Notes	Monthly exams
4	3	CLO1+ CLO2	Center of a group.		

5	3	CLO1+CLO2 CLO3	Cyclic group Normal Subgroup		
6	3				
7		CLO3	Algorithm of division		
8	3		Lagrange theorem		
9	3	CLO1+ CLO2	definition and examples		
10	3	CLO3+ CLO2			
	3	CLO2+ CLO4	Z_n - Group		
11	3	.	definition and examples		
12	3	CLO5+ CLO4	number of theory		
13	3				
14	3	CLO5+ CLO6	Product of Subgroup		
15	3	CLO1+ CLO2	Some basic properties of		
16		CLO1+ CLO2	Coset of subgroups		
17	3	CLO1+CLO2			
18	3	CLO3	The Commutator		
19	3	CLO3	semi groups		
20	3	CLO3+ CLO2			
21	3	CLO2+ CLO4	The Conjugate of element		
22	3	CLO5+ CLO4	Group Homomorphism		
		CLO5+ CLO6	Kernel of group		
23	3	CLO6+ CLO3	homomorphism		
24	3	CLO6+ CLO4	Definition, properties and		
25	3	CLO7+CLO5	Examples		
26	3	CLO7+ CLO8	Isomorphic Group		
27	3		Definition, properties and		
28		CLO8+ CLO9	Examples		
		.	Fundamental Theorem in		
		CLO8+ CLO9	Isomorphic.		
		CLO9+ CLO10	Natural mapping		

11. Course Evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)
- **60 points:** Final Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

1. Course Name:					
Axioms and geometry systems					
2. Course Code:					
3. Semester / Year:					
2026/2025					
4. Description Preparation Date:					
2025/9/1					
5. Available Attendance Forms:					
attend					
6. Number of Credit Hours (Total) / Number of Units (Total)					
(3) hours per week * 30 weeks					
7. Course administrator's name (mention all, if more than one name)					
Name: Assit. Lect. Salwa Muhamed					
8. Course Objectives					
Course Objectives - Understand the role of axioms, undefined terms, and logical reasoning in geometry. - Explain the structure and development of axiomatic systems. - Distinguish between Euclidean and non-Euclidean geometries. - Construct and evaluate mathematical proofs using deductive reasoning. - Analyze the consistency, independence, and completeness of geometric axioms. - Apply geometric axioms and theorems to solve mathematical problems. - Compare different geometry systems and identify their applications in mathematics and science. - Develop critical thinking, logical reasoning, and proof-writing skills..					
9. Teaching and Learning Strategies					
A. Knowledge and understanding A1. Enable the student to recognize the concept of axioms. A2. Help the student to recognize and understand engineering systems A3. Enable the student to identify theorems and proofs. B. Skill Objectives B1. Training students on the proof of theorems B2. Enable the student to prove the results. C. Teaching and learning methods T1. Sudden daily tests. T2. Quarterly exams. T3. Giving students grades for daily participation W. General Skills W1. Encourage daily discussions. W2. Ask thought-provoking questions.					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1-8	24	A1+A2+B2+T3	Axiomatic Systems, Properties of Axioma System, Elementary Engineering	Daily preparation	Exam and Daily discussion
9-16	24	B1+B2+C1+C2	Application and comparison	Daily preparation	Exam and daily discussion
17-22	18	T1+B2+A2	Euclidean geometry calendar	Daily preparation	Exam and daily discussion
23-27	15	W1+T2+A1	In this topic, the student is explained to non-Euclidean geometry and its types	Daily preparation	Exam and daily discussion
28-30	9	W2+T3+B2	The student can understand the meaning of perspective and projection geometry	Daily preparation	Exam and daily discussion

11. Course Evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)
- **60 points:** Final Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	مفاهيم اساسية في الهندسة د. امال شهاب الدين
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

1. Course Name:	Foundations of education
2. Course Code:	
3. Semester / Year:	2026-2025
4. Description Preparation Date:	2025/9/1
5. Available Attendance Forms:	My attendance is mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)	60 hours 2 hours
7. Course administrator's name (mention all, if more than one name)	Assistant lecturer ALAA SABAH MOHAMMED email : alaa.mohammed@uowasit.edu.iq
8. Course Objectives	
Course Objectives	

- Increasing the student's understanding of the educational and social reality throughout the ages, realizing the educational process at its utmost necessity, and understanding educational theories on various peoples, ancient and modern.
- Interpreting the educational process from a historical and philosophical point of view
- Shedding light on upbringing and education,
- Explaining the importance of the role of social educational institutions
- Helping students to train and feel the importance of the educational process,
- It is also a science that describes and explains the impact of educational systems on historical reality, past and present
- Identifying the educational reality revealed by the philosophical schools of education
- Determine the goals of community education and apply educational concepts.

9. Teaching and Learning Strategies

Strategy

CLO1: Lecture Method: Present key concepts and theories.

CLO2: Group Discussion: Encourage learners to share ideas and perspectives.

CLO3: Question-and-Answer Sessions: Check understanding and promote critical thinking.

CLO4: Case Studies: Analyze real educational situations.

CLO5: Problem-Solving Activities: Develop decision-making and analytical skills.

CLO6: Cooperative Learning: Students work together to complete tasks.

CLO7: Brainstorming: Generate ideas on educational topics.

CLO8: Presentations and Seminars: Build communication and research skills.

CLO9: Role-Playing: Practice classroom and school scenarios.

CLO10: Project-Based Learning: Investigate educational issues through projects.

CLO11: ICT Integration: Use digital resources, videos, and online learning platforms.

CLO12: Reflective Journals: Encourage students to reflect on their learning experiences.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
8-1	2	CLO1+ CLO2	The meaning and goals of education Its theories and fields	Daily preparation	Giving daily Assignments and checking daily attendance
12-9		CLO1+ CLO2 CLO1+CLO2 CLO3	The historical basis of education Old education Chinese education		
15-13	2	CLO3	Unian education Medieval education		
20-16	2	CLO1+ CLO2 CLO3+ CLO2 CLO2+ CLO4	Arab education before Islam and after Islam Modern education The relationship between education and society	Daily preparation	Giving daily Assignments and checking daily attendance
24-21	2	CLO5+ CLO4	The relationship between the individual and the environment Congenital education Family education		
27-25		CLO1+ CLO2 CLO1+ CLO2 CLO3 CLO3 CLO3+ CLO2 CLO2+ CLO4	National Education Health education Education and its impact on economic development Education and method in research National and social foundations		
				My presence	Giving daily Assignments and checking daily attendance

30-28	2	CLO5+ CLO4	Education in a social perspective	My presence	Giving daily Assignments and checking daily attendance
		CLO5+ CLO6 CLO6+ CLO3 CLO6+ CLO4 CLO7+CLO5 CLO7+ CLO8	Comprehensive school Systematic education Teaching methods in Islamic education Islamic educational thought Education rights in the views of the House of Prophethood Teacher rights in Islam Ibn Khaldun Ibn Sina Learner rights Educational thought		
		CLO8+ CLO9 CLO8+ CLO9 CLO9+ CLO10	The social and economic basis The most important functions of the school The scientific basis of education The importance of historical research in educational fields	My presence	Giving daily Assignments and checking daily attendance

11. Course Evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)
- **60 points:** Final Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Foundations of education by Assistant Professor Ali Abdel Karim
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

Course Name:					
English Language					
Course Code:					
Depeartment of Mathematics					
Semester / Year:					
First semester 2025-2026					
Description Preparation Date:					
21/10/2025					
Available Attendance Forms:					
Actual Attendance					
Number of Credit Hours (Total) / Number of Units (Total): 30 hours					
Course administrator's name (mention all, if more than one name)					
Name	Assist.Prof.Dr. Haider Laeaby Saad				
Course Objectives					
1-	Familiarizing MSc students with basic language skills required for their study.				
2-	Introducing them to the proper use of English language in terms of types of sentences and other basic structures in English.				
3-	Increasing MSc students' knowledge in the skills of reading and writing.				
4-	Exposing MSc students to real-life situations in English to foster the appropriate use of different grammatical structures to cope with such situations.				
Teaching and Learning Strategies					
1-	In-class lectures				
2-	Power point presentations				
3-	Class discussions				
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	2	International student, Going abroad to study: Reading	Unit One	lecture	Assignment
4-7	2	International student, Going abroad to study: Listining	Unit Two	lecture	Assignment

8-10	2	Where in the world...?, Reading	Unit Three	lecture	Assignment / Quiz
11-13	2	Where in the world...?, Listening	Unit Four	lecture	Assignment
14-16	2	Newspaper articles, Reading	Unit Five	lecture	Assignment / Quiz
17-19	2	Newspaper articles, Listening	Unit Six	lecture	Assignment
20-22	2	Modern technology, Innovations	Unit Seven	lecture	Assignment
23-		Mid - Term Exam			
24-	2	Conferences and visits	Unit Eight	lecture	Assignment
25-	2	Science and our world, Air pollution	Unit Nine	lecture	Assignment
26-	2	People: past and present, Three famous writers	Unit Ten	lecture	Quiz
27-	2	The world of IT, Computers	Unit Ten	lecture	Assignment
28-	2	Inventions, discoveries, and processes, How things work	Unit Ten	lecture	Assignment
29-	2	Travel and tourism	Unit Ten	lecture	Assignment
30-		Final Exam			

Course Evaluation

The total grade is 100 points, distributed as follows:

40 points: Coursework (assignments, participation, quizzes)

60 points: Final Exam

Learning and Teaching Resources

Required textbooks (curricular books, if any)	New Headway Pulse for Beginners, John and Liz Soars,
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1. Course Name:					
The crimes of the Baath regime in Iraq					
2. Course Code:					
3. Semester / Year:					
2025/2026					
4. Description Preparation Date:					
2025/9/1					
5. Available Attendance Forms:					
Actual mandatory attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 theoretical hours					
7. Course administrator's name (mention all, if more than one name)					
Name: Assist. Lect. Alaa Abdal Ameer Muhamed					
8. Course Objectives					
Course Objectiv	The student learns about the topics of the course that shed light on the crimes committed by the previous regime in Iraq through clarification The concept of crime in general in terms of its types and types, an explanation of the violations that have affected human rights, and also an explanation of environmental problems Which Iraq faced because of this system.				
9. Teaching and Learning Strategies					
Strategy	*Giving lectures by giving logical explanations of the topic being taught *Class participation through preparing reports related to the subject and discussing them				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	The concept of crime (definition - types -its sections)	Baath crimes	theoretical	Discussion/questions and answers
2	1	Crimes ofthe Baath regime (international crime - its types)	Baath crimes	theoretical	Discussion/questions and answers
3	1	Decisions issued by the court The Iraqi Supreme Criminal Cou	Baath crimes	theoretical	Discussion/questions and answers
4	1	Psychological crimes (mechanis and consequences)	Baath crimes	theoretical	Discussion/questions and answers
5	1	Social crimes (militarization of society)	Baath crimes	theoretical	Discussion/questions and answers

6	1	The Baath regime's position on Religion	Baath crimes	theoretical	Discussion/questions and answers
7	1	Violating Iraqi laws	Baath crimes	theoretical	Discussion/questions and answers
8	1	First semester exam	Baath crimes		
9	1	Pictures of human rights violations	Baath crimes	theoretical	Discussion/questions and answers
10	1	Decisions on political and military violations of the Baath regime	Baath crimes	theoretical	Discussion/questions and answers
11	1	Prison and detention places of the Baath regime	Baath crimes	theoretical	Discussion/questions and answers
12	1	Environmental crimes of the Baath regime	Baath crimes	theoretical	Discussion/questions and answers
13	1	Military and radioactive contamination and mine explosions	Baath crimes	theoretical	Discussion/questions and answers
14	1	Bombing the city of Halabja with chemical weapons	Baath crimes	theoretical	Discussion/questions and answers
15	1	Destruction of cities and villages (scorched earth policy)	Baath crimes	theoretical	Discussion/questions and answers
16	1	Bombing of holy shrines, mosques and Husseinias	Baath crimes	theoretical	Discussion/questions and answers
17	1	Drying the marshes	Baath crimes	theoretical	Discussion/questions and answers
18	1	Razing palm groves, trees and Crops	Baath crimes	theoretical	Discussion/questions and answers
19	1	Mass grave crimes	Baath crimes	theoretical	Discussion/questions and answers
20	1	The events of 1963 and their relationship to mass graves	Baath crimes	theoretical	Discussion/questions and answers
21	1	Events extending from (1979 -2003) and their relationship In mass graves	Baath crimes	theoretical	Discussion/questions and answers
22	1	Chronological classification of genocide graves in Iraq	Baath crimes	theoretical	Discussion/questions and answers
23	1	Genocide graves related to the Iraq War Iranian (1980-1988)	Baath crimes	theoretical	Discussion/questions and answers
24	1	Graves of the 1983 Barzanian	Baath crimes	theoretical	Discussion/questions

		Kurdish genocide			and answers
25	1	Genocide graves for the victims of the Anfal massacre for the period (1987-1988)	Baath crimes	theoretical	Discussion/questions and answers
26	1	Genocide graves for victims of the Shaabaniya uprising For the year 1991	Baath crimes	theoretical	Discussion/questions and answers
27	1	Limiting the three ruling powers to the Baath Party	Baath crimes	theoretical	Discussion/questions and answers
28	1	Violation of the right to party pluralism by the Baath regime	Baath crimes	theoretical	Discussion/questions and answers
29	1	Violation of international law (the first and second Gulf wars - International blockade 1990)	Baath crimes	theoretical	Discussion/questions and answers
30	1	The impact of the transitional period on combating authoritarian politics Law No. 32 of 2016 banning the Baath Party	Baath crimes	theoretical	Discussion/questions and answers
31	1	Second semester exam	Baath crimes		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, dailioral, monthly, or written exams, reportsetc

*Semester/30%

*Daily preparation, activities and attendance/10%

*Final exam 60%

12. Learning and Teaching Resources

Required textbooks (curricular books any)	The crimes of the Baath regime in Iraq
Main references (sources)	1 - The Permanent Iraqi Constitution of 2005 2- A law prohibiting the Baath Party, entities, parties , and racist, terrorist, and takfiri activities No. 32 of 2016 3- General principles in the Iraqi Penal Code / Prof. Dr. Ali Hussein Al-Khalaf, Prof. Dr. Sultan Abdul Qadir
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Baath crimes documentaries on the Internet

1. Course Name:					
Mathematical Analysis					
2. Course Code:					
3. Semester / Year					
:2026/2025					
4. Description Preparation Date:					
2025/9/1					
5. Available Attendance Forms:					
attending					
6. Number of Credit Hours (Total) / Number of Units (Total): 90 Hours/6 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Assist. Lect. Gefran Munaim Ajmi					
8. Course Objectives					
Course Objectives • Understands the relationships between field of real numbers and field of integer numbers • Understands that the field of real numbers is complete ordered field • Gives the idea of converge sequence • To define the concept of Cauchy sequence • To define the concept of series • To know that the sequence in the field of real numbers is converge • Tests the convergence of series • To define the concept of absolutely converge					
9. Teaching and Learning Strategies					
Strategy CLO1: Interactive Lectures: Explain key concepts with worked examples. CLO2: Problem-Solving Sessions: Solve analytical and computational exercises individually and in groups. CLO3: Guided Practice: Provide step-by-step demonstrations followed by student practice. CLO4: Collaborative Learning: Encourage teamwork on challenging mathematical problems. CLO5: Tutorials and Recitation Classes: Reinforce concepts through additional exercises. CLO6: Use of Mathematical Software: Introduce tools such as MATLAB, GeoGebra, Mathematica, or Python for visualization and computation. CLO7: Assignments and Homework: Strengthen understanding through regular practice. CLO8: Class Discussions: Analyze different solution methods and mathematical proofs.					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	4	CLO1+ CLO2	Properties of real numbers as complete ordered field, relation between rational and irrationals, extended real numbers Q in complete ordered field, distance on reals, define the sets, like $R^2, \dots, R^n, I^2, \dots$ and its Euclidean distance	Explanation and discussion	Questions, discussion and Exam
4-6	4	CLO1+ CLO2	Definition, various, examples,	Explanation and	Questions,

			pseudo metric space, subspace, open and closed sets and its properties, equivalent metrics on the same space, closed sets and its properties, dense set, bounded set, compact set, Heine-Borel theorem	discussion	discussion and exam
6-9	4	CLO3+ CLO2	Sequences, converge sequence, divergent sequences, bounded sequence, monotone sequence, Cauchy sequence, Banach contraction principle	Explanation and discussion	Questions, discussion and exam
10-15	4	CLO4+ CLO5	Numerical series[definition, converge, examples, test of converges, absolutely and conditionally converge]	Explanation and discussion	Questions, discussion and exam
16-20	4	CLO6+CLO5	Limits, continuity, examples, equivalent definition of continuous uniform continuous	Explanation and discussion	Questions, discussion and exam
21-26	4	CLO7	Definition, geometric mean, derivative and continuous examples	Explanation and discussion	Questions, discussion and exam
27-29	4	CLO8+CLO7	Definition, examples, some theorems of integral function, integral as linear transformation	Explanation and discussion	Questions, discussion and exam
30	4	CLO5+ CLO8	Measure Theory and Lebesgue's integral	Explanation and discussion	Questions, discussion and exam

Course Evaluation

The total grade is 100 points, distributed as follows:

40 points: Coursework (assignments, participation, quizzes)

60 points: Final Exam

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Lectures on Mathematical Analysis
Main references (sources) 1- Burril C.W., Knudsen J.R., Variables, 1969. 2- Rudin W., Principles of Mathematical analysis, 1964 3- Malik S. C., Arora S., Mathematical analysis, 2008. د. عادل غسان نعيم "مقدمة في التحليل الرياضي"	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

1. Course Name:					
Statistics and probability					
2. Course Code:					
3. Semester / Year:					
2026/2025					
4. Description Preparation Date:					
2025/9/1					
5. Available Attendance Forms:					
Self attendance					
6. Number of Credit Hours (Total) / Number of Units (Total) :					
120 hours per year and 6 units per week					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ali Hussien shuaa Email: alishuaa@uowasit.edu.iq And Saad obaid jameel Email: sjameel@uowasit.edu.iq					
8. Course Objectives					
Course Objectives • Descriptive statistics (definitions, random variables, population, sample, data, data graphing, correlation and regression) • Introduction to probability (definitions, experiments, events, counting methods, axioms, probability theories, independent events, conditional events, Bayes' theorem, examples, external questions) • Random variables and probability distributions (definitions, types, theories, examples, external questions)					
9. Teaching and Learning Strategies					
Strategy CLO1: Interactive Lectures – Explain statistical and probability concepts using real-life examples. CLO2: Problem-Solving Activities – Solve statistical and probability problems individually and in groups. CLO3: Data Analysis Projects – Collect, organize, analyze, and interpret real-world data. CLO4: Collaborative Learning – Encourage teamwork in solving statistical investigations. CLO5: Hands-on Activities – Use experiments such as coin tossing, dice rolling, and sampling exercises. CLO6: Case Studies – Analyze real datasets from education, business, health, and science. CLO7: Class Discussions – Interpret statistical results and probability outcomes. CLO8: Inquiry-Based Learning – Encourage students to formulate questions, collect data, and draw conclusions. CLO9: Project-Based Learning – Complete projects involving surveys, data collection, and statistical reporting. CLO10: Formative Assessments – Use quizzes, assignments, and presentations to monitor learning progress.					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1- 8	32	The student learns what was presented in the lecture	Descriptive statistics	Using the pen and board and data show	Exams and quick exams and assignments
9 - 18	40	The student learns	Introduction in	Using the pen and	Exams and quick exams and

		what was presented in the lecture	probability	board and data show	assignments
19 -23	20	The student learns what was presented in the lecture	Random variables	Using the pen and board and data show	Exams and quick exams and assignments
24 - 30	28	The student learns what was presented in the lecture	Test hypothesis	Using the pen and board and data show	Exams and quick exams and assignments
11. Course Evaluation					
The total grade is 100 points, distributed as follows: 40 points: Coursework (assignments, participation, quizzes) 60 points: Final Exam					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			1- Probability theory, written by: Dr. Walid Al-Nouri * Introduction to Statistics, written by: Muhammad Sobhi Abu Saleh and Adnan Muhammad Auf 2- Previous topics from the second grade Descriptive Statistics and Probability		
Main references (sources)			1. Probability and Statistics by Morris H. De Groot 2. Introduction to Mathematical Statistics By Hogg and Craig		
Recommended books and references (scientific journals, reports...)			1. An Introduction to probability theory and mathematical statistics; by Rohtagi 2. Introduction to the theory of statistics; by Mood , Graible and Boes		
Electronic References, Websites					

1. Course Name:
Ring Theory
2. Course Code:
3. Semester / Year:
2025/2024
4. Description Preparation Date:
2024/9/1
5. Available Attendance Forms:
Self attendance
6. Number of Credit Hours (Total) / Number of Units (Total) :
120 hours per year and 6 units per week
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Aqeel Jassim Noor

Email: aqeel.noor@uowasit.edu.iq

8. Course Objectives

Course Objectives

- The students will study the special skills to solving problems in rings theory
- Students will be learning general skills in mathematics

9. Teaching and Learning Strategies

Strategy

- **Interactive Lectures** – Introduce the fundamental concepts of rings, ideals, homomorphisms, and integral domains with examples.
- **Problem-Solving Sessions** – Engage students in proving theorems and solving abstract algebra problems.
- **Guided Discovery Learning** – Encourage students to identify ring properties through carefully designed examples and exercises.
- **Collaborative Learning** – Organize students into groups to discuss proofs, solve problems, and present solutions.
- **Proof-Based Learning** – Emphasize logical reasoning and mathematical proof techniques.
- **Inquiry-Based Learning** – Encourage students to investigate conjectures and explore algebraic structures independently.
- **Worked Examples** – Demonstrate key concepts using familiar rings such as the integers, polynomial rings, and matrix rings.
 - **Class Discussions and Seminars** – Facilitate discussions on important theorems, definitions, applications of ring theory.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Rings Definition	Rings	Using the pen and board and data show	Exams and quick exams and assignments
2	2	Example and General Properties of Rings			
3	2	Direct sum of rings and some Remarks			
4	2	Integral domain	Subrings		
5	2	Division ring			
6	2	Field			
7	2	Boolean rings	Ideals		
8	2	Center of a ring.			
9	2	Subrings Definition			
10	2	characterization of subring and Examples	Ideals		
11	2	some operations on subrings-subfields			
12	2	Ideals Definitions and			
13	2	Examples	Ideals		
14	2	operations on ideals			
15	2	addition of ideal, multiplication of ideals,			

8	2	intersection of ideal, union of ideal			
	2	initely generated ideal principal ideal ring finitely generated ring rings as direct sum of ideals.			
9-11	4	Factor ring definition and examples	Factor ring		
	4	some relationships			
	4	between a ring R and its factor ring.			
12	2	Ring homomorphism definition and examples	Ring homomorphism		
	2	Kernel and image of ring homomorphism.			
13	2	Some basic properties of ring homomorphisms			
	2	Fundamental theorems of ring homomorphisms			
14-17	2	Embedding of ring and theorem of embedding.	Certain special types of ideals		
		Certain special types of ideals			
	4	maximal ideal			
	4	prime ideal			
	4	semiprime ideal			
18-19	4	primary ideal and radical of ideals	Polynomial ring		
		Polynomial ring definition and examples			
	2	some relationships			
	2	between a ring R and the polynomial ring over R			
	2	degree of polynomial			
	2	with some theorems related with this concept			
	2	Division Algorithm theorem			
	2	factor theorem			
21	2	remainder theorem			
	2	irreducible polynomial			
	2	polynomial ring over a field ($F[x]$, where F is a field)			
	2	the quotient of polynomial ring over a field.			
		Extension of fields	Extension of		

22-25	4	Definitions and some example to calculate extension field of certain field.	fields		
	4				
	4				
	4				
26-30	8	Modules Submodules factor modules homomorphism of modules	Modules		
	4				
	4				
	4				
	2				
	2				

11. Course Evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)
- **60 points:** Final Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	A first course in ring and ideals
Recommended books and references (scientific journals, reports...)	Algebra (graduate text in mathematics)
Electronic References, Websites	

Course Description Form

1- Course Name:	Numerical Analysis
2- Course Code:	
3- Semester / Year: semester	2025-2026
4- Description Preparation Date:	19/10/2025
5- Available Attendance Forms:	
6- Number of Credit Hours (Total) / Number of Units (Total) :	90 hours (3 units)

7- Course administrator's name:					
Name: Dr. Ali Khalaf Hussain			Email: aliKhalaf@uowasit.edu.iq		
8- Course Objectives					
By the end of the course, students are expected to be able to: 1- Understand the fundamentals of numerical analysis and its applications. 2- Apply numerical methods to find approximate solutions to equations. 3- Analyze numerical errors and their sources. 4- Use software to implement numerical algorithms. 5- Evaluate the accuracy and efficiency of different numerical methods.					
9- Teaching and Learning Strategies					
CLO1: Explain the basic concepts of numerical analysis CLO2: Apply numerical methods to solve equations CLO3: Analyze numerical errors CLO4: Use software tools to implement algorithms CLO5: Evaluate the efficiency and accuracy of numerical methods					
10- Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	CLO1+ CLO2	A-B methods	Using the pen and board and data show	Class Activities
2	3	CLO1+ CLO2	A-M methods	Using the pen and board and data show	Class Activities
3	3	CLO1+ CLO2	P-C methods	Using the pen and board and data show	Class Activities
4	3	CLO1+ CLO2	Least square approximation	Using the pen and board and data show	Class Activities
5	3	CLO3	Orthogonal polynomial	Using the pen and board and data show	Class Activities
6	3	CLO3	Pade Approximation	Using the pen and board and data show	Class Activities
7	3	CLO3	Trigonometric Approximation	Using the pen and board and data show	Class Activities
8	3	CLO5+ CLO2	Midterm Examination	Using the pen and board and data show	Midterm Exam
9	3	CLO4	Power method	Using the pen and board and data show	Assignments
10	3	CLO4+ CLO3	Householder method	Using the pen and board and data show	Assignments
11	3	CLO5	Inverse &symmetric method	Using the pen and board and data show	Assignments+ Class Activities

12	3	CLO5	Elliptic PDE	Using the pen and board and data show	Assignments+ Class Activities
13	3	CLO4+ CLO5	Parabolic PDE	Using the pen and board and data show	Assignments+ Class Activities
14	3	CLO3+ CLO4	Hyperbolic PDE	Using the pen and board	Assignments+ Class Activities
15	3	CLO4+ CLO5	Applications	Using data show	Project/Report

11- Course Evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)
- **60 points:** Final Exam

12- Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Burden, R. L., & Faires, J. D. (2010). <i>Numerical Analysis</i> (9th ed.).
Main references (sources)	1- Conte, S. D., & de Boor, C. (1980). <i>Elementary Numerical Analysis: An Algorithmic Approach</i> (3rd ed.). McGraw-Hill.

1. Course name :	complex analysis
2. Course code :	complex analysis
3. Semester/year :	2025/2026
4. the date this description was prepared :	2025/9/1
5. Available forms of attendance :	Actual mandatory attendance
6. Number of study hours (total)/number of units (total)	120hour
7. Name of the course administrator (if more than one name is mentioned(	Dr. Suad Younus AbdulHassan
8. Course objectives	

- Developing students' analytical capabilities to reach logical solutions to various problems related to the subject of complex analysis
- Preparing and qualifying students to meet the requirements of work in the private and public sectors in mathematics sciences and to meet the education sector with highly qualified cadres.
- Students acquire the skills that enable them to teach mathematics

9. Teaching and learning strategies

The strategy

CLO1: Explanation and clarification through lectures

CLO2: Self-education through homework

CLO3: Graduation projects

CLO4: Solving difficult problems using scientific material

CLO5: Use of e-learning

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
Daily and monthly exams and group discussions	Blackboard with datashow	Introduction, real and complex number, powers and roots for complex number, regions in complex plane	CLO1+CLO2	24	1-8
Daily and monthly exams and group discussions	Blackboard with datashow	Function and complex variable functions, limits and derivatives function, continuity, analytic functions, Cauchy Riemann equations, harmonic functions	CLO2+CLO4	24	9-16
Daily and monthly exams and group discussions	Blackboard with datashow	Some elementary functions, exponential functions, polynomials and trigonometric functions, rational, Hyperbolic function, Properties of elementary and logarithmic functions.	CLO3+CLO1	24	17-22
Daily and monthly exams and group discussions	Blackboard with datashow	Complex integration, contour, simply and multiple connected domain, Cauchy integral theorem, Cauchy integral formula, Conformal mappings and its applications.	CLO4+CLO2	24	23-27
Daily and monthly exams and group discussions	Blackboard with datashow	Powers series and convergent, Tayler and Laurent theorems, singulars points ant types, Residue theorem and its applications	CLO4+CLO5	24	28-30

11. Course evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)

• 60 points: Final Exam	
12. learning and teaching resources	
By Churchill	Complex Variable and Applications
By James ward Brown	Complex variable and applications

1. Course Name:	Mathematical Statistics
2. Course Code:	
3. Semester / Year:	2025/2026
4. Description Preparation Date:	2025/9/1
5. Available Attendance Forms:	Self-attendance
6. Number of Credit Hours (Total) / Number of Units (Total) :	120 hours per year and 6 units per week
7. Course administrator's name (mention all, if more than one name)	Name: Saad obaid jameel Email: sjameel@uowasit.edu.iq
8. Course Objectives	
Course Objectives This course aims to provide the student with basic information and practical training in the field of biostatistics, including the ability to use equations and mathematical logic in evaluating the probability of the validity of the information and the extent of the correlation between variables and linking them to the health, educational, social reality and other fields. 1- The ability to analyze life's problems using high skills and applying methodologies. 2- The ability to communicate with others within the work team to motivate and highlight the spirit of ability. 3- The ability to process information, such as understanding graphs and collecting information. 4- The ability to acquire new knowledge, learn from previous experiences, and be open to new solutions and innovations.	
9. Teaching and Learning Strategies	
Strategy CLO1: Interactive Lectures – Explain statistical theories, distributions, estimation, and hypothesis testing using clear examples. CLO2: Problem-Solving Sessions – Provide regular exercises on probability distributions, estimators, confidence intervals, and hypothesis tests. CLO3: Worked Examples – Demonstrate step-by-step solutions to statistical problems before independent practice. CLO4: Collaborative Learning – Encourage students to solve statistical problems and discuss interpretations in small groups.	

CLO5: Inquiry-Based Learning – Engage students in exploring statistical models, formulating hypotheses, and interpreting results.

CLO6: Case Studies – Analyze real-world datasets from science, economics, medicine, engineering, and social sciences.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1- 8	32	The student learns what was presented in the lecture	Introduction in probability and random variables	Using the pen and board and data show	Exams and quick exams and assignments
9 - 18	40	The student learns what was presented in the lecture	Discrete distribution	Using the pen and board and data show	Exams and quick exams and assignments
19 -23	20	The student learns what was presented in the lecture	Continuous distribution	Using the pen and board and data show	Exams and quick exams and assignments
24 - 30	28	The student learns what was presented in the lecture	Sampling distribution and estimation	Using the pen and board and data show	Exams and quick exams and assignments

11. Course Evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)
- **60 points:** Final Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Introduction to mathematical statistics, by Hogg and Craig.
Main references (sources)	3. Probability and Statistics, by Morris, H. Degroot 4. Introduction to Mathematical Statistics By Hogg and Craig
Recommended books and references (scientific journals, reports...)	1- Probability and Statistics, by Morris, H. Degroot 2- SOME BASIC THEORY FOR STATISTICAL INFERENCE M.S. BARTLETT, F.R.S. and D.R. COX, F.R. S
Electronic References, Websites	

1- Course Name:					
General Topology					
2- Course Code:					
3- Semester / Year: semester					
2025-2026					
4- Description Preparation Date:					
30/01/2026					
5- Available Attendance Forms:					
Actual Attendance					
6- Number of Credit Hours (Total) / Number of Units (Total) :					
130 hours (3 units)					
7- Course administrator's name:					
Name: Saad Mahdi Jaber Email: s.jaber@uowasit.edu.iq					
8- Course Objectives					
1- Understand the foundational concepts and language of topology. 2- Analyze and classify topological spaces using topological properties. 3- Apply concepts of continuity, connectedness, and compactness. 4- Construct rigorous mathematical proofs involving topological structures. 5- Develop abstract reasoning and problem-solving skills. 6- Connect topological concepts with advanced areas of mathematics.					
9- Teaching and Learning Strategies					
CLO1: Define and explain fundamental concepts of topology including topological spaces, open and closed sets, bases, and subbases. CLO2: Describe and distinguish topological properties such as continuity, connectedness, compactness, and separation axioms. CLO3: Analyze topological structures and determine their properties using formal mathematical arguments. CLO4: Construct and evaluate rigorous proofs of topological theorems. CLO5: Apply topological concepts to solve mathematical problems and investigate examples and counterexamples.					
10- Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	CLO1+ CLO2	Introduction to Topology and Motivation	Using the pen and board and data show	Class Activities
2	3	CLO1+ CLO2	Topological Spaces and Examples	Using the pen and board and data show	Class Activities
3	3	CLO1+ CLO2	Open Sets and Closed Sets	Using the pen and board and data show	Class Activities
4	3	CLO1+ CLO2	Neighborhoods and	Using the pen and	Class Activities

			Limit Points	board and data show	
5	3	CLO3	Closure, Interior, and Boundary	Using the pen and board and data show	Class Activities
6	3	CLO3	Bases and Subbases	Using the pen and board and data show	Class Activities
7	3	CLO3	Generated Topologies	Using the pen and board and data show	Class Activities
8	3	CLO5+ CLO2	Midterm Examination	Using the pen and board and data show	Midterm Exam
9	3	CLO4	Continuous Functions	Using the pen and board and data show	Assignments
10	3	CLO4+ CLO3	Homeomorphisms	Using the pen and board and data show	Assignments
11	3	CLO5	Subspace Topology	Using the pen and board and data show	Assignments+ Class Activities
12	3	CLO5	Product Topology	Using the pen and board and data show	Assignments+ Class Activities
13	3	CLO4+ CLO5	Quotient Topology	Using the pen and board and data show	Assignments+ Class Activities
14	3	CLO3+ CLO4	Connectedness and Path Connectedness	Using the pen and board and data show	Assignments+ Class Activities
15	3	CLO4+ CLO5	Compactness	Using the pen and board and data show	Project/Report
11-Course Evaluation					
The total grade is 100 points, distributed as follows: • 40 points: Coursework (assignments, participation, quizzes, midterm exam) • 60 points: Final Exam					
12-Learning and Teaching Resources					
Required textbooks (curricular books, if any)			1- Munkres, James R. <i>Topology</i> . 2nd ed., Prentice Hall, Inc., 2000. 2- Simmons, George F. <i>Introduction to Topology and Modern Analysis</i> . McGraw-Hill, 1963.		
Main references (sources)			10- Kelley, J. L. <i>General Topology</i> . Springer, New York, 1955. 11- Morris, Sidney A. <i>Topology Without Tears</i> , 2014. 12- Steen, Lynn Arthur, and J. Arthur Seebach. <i>Counterexamples in Topology</i> . Springer, New York, 1978		

1. Course name:					
Applied Mathematics					
2. Course code:					
3. Semester/year:					
2026/2025					
4. The date this description was prepared:					
2025/9/1					
5. Available forms of attendance:					
Actual mandatory attendance					
6. Number of study hours (total)/number of units (total)					
90 hours (3 hours per week)					
7. Name of the course administrator:					
Assist Prof Dr. Nisreen Najm Abd					
8. Course objectives					
Make the student able to: • Qualifying and training the student and teaching him the types of differential equation and their solutions and how to apply these equations as mathematical models for natural phenomena. • Qualifying and training the student and teaching him the importance of mathematical models and how to solve these mathematical problems using different tourniquets.					
9. Teaching and learning strategies					
The strategy • Explanation and clarification through lectures • Self-education through homework • Graduation projects • Solving difficult problems using scientific material • Use of e-learning					
10.Course structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	week
Daily and monthly exams and group discussions	Explanation + discussion	Differential Equations	Revision: Differential Equations and their solutions	6	1-2
Daily and monthly exams and group discussions	Explanation + discussion	Differential Equations	Second-order ODEs and their applications	6	3-4
Daily and monthly exams and group discussions	Explanation + discussion	Mathematical Models	Mathematical Models	6	5-6

Daily and monthly exams and group discussions	Explanation + discussion	Mathematical Models	Equilibrium Points and the directional fields	6	7-8
Daily and monthly exams and group discussions	Explanation + discussion	Mathematical Models	Mathematical Model of the Radioactive decay	6	9-10
Daily and monthly exams and group discussions	Explanation + discussion	Mathematical Models	Mathematical Model of Harmonic Oscillation	6	11-12
Daily and monthly exams and group discussions	Explanation + discussion	Mathematical Models	Mathematical Model of Exponential Growth and its application in Financial Mathematics	6	13-14
Daily and monthly exams and group discussions	Explanation + discussion	Mathematical Models	Solution of the Logistic Equation and its application in Mathematical Biology	6	15-16
Daily and monthly exams and group discussions	Explanation + discussion	Matrices	Principles of matrices	6	17-18

11.Course evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)
- **60 points:** Final Exam

12.Learning and Teaching Resources

- 1- Jigarkumar Patel, Kathryn Paulk, Differential Equations With Applications: Class Notes With Detailed Examples, 2019.
- 2- June Lue, Matrix Decomposition and Applications, 2022.
- 3- John Adrian Bondy and U.S.R. Murty, Graph Theory With Applications, 1984.
- 4- Robert Ghrist, Elementary Applied Topology, 2014.

1. Course name:					
Fuzzy Mathematics					
2. Course code:					
3. Semester/year:					
2026/2025					
4. The date this description was prepared:					
2025/9/1					
5- Available forms of attendance:					
Actual mandatory attendance					
6- Number of study hours (total)/number of units (total)					
90 hours (3 hours per week)					
7- Name of the course administrator:					
Assist Prof Dr. Daher Waqly Freh Email: daheralbaydli@uowasit.edu.iq					
8- Course objectives					
Make the student able to: • Define the fundamental concepts of fuzzy mathematics and fuzzy set theory. • Distinguish between classical (crisp) sets and fuzzy sets. • Perform operations on fuzzy sets and fuzzy relations. • Apply membership functions to represent uncertain or imprecise information. • Analyze fuzzy logic principles and fuzzy inference systems. • Solve mathematical problems involving fuzzy numbers and fuzzy arithmetic. • Apply fuzzy mathematics to real-world problems in engineering, decision-making, artificial intelligence, and data analysis. • Develop analytical, problem-solving, and critical-thinking skills in handling uncertainty.					
9- Teaching and learning strategies					
The strategy CLO1: Interactive Lectures – Introduce core concepts of fuzzy sets, fuzzy logic, and fuzzy systems with practical examples. CLO2: Problem-Solving Sessions – Engage students in solving exercises involving fuzzy sets, relations, and fuzzy arithmetic. CLO3: Worked Examples – Demonstrate step-by-step solutions to fuzzy mathematics problems. CLO4: Collaborative Learning – Encourage group discussions and teamwork on fuzzy logic applications. CLO5: Inquiry-Based Learning – Guide students to investigate fuzzy models and compare them with classical mathematical models. CLO6: Case Studies – Analyze applications of fuzzy mathematics in artificial intelligence, engineering, control systems, and decision-making. CLO7: Project-Based Learning – Assign projects that apply fuzzy mathematics to practical problems such as pattern recognition, risk assessment, or intelligent systems. CLO8: Class Discussions and Seminars – Encourage students to present and evaluate fuzzy mathematics applications in research and industry. CLO9: Assignments and Tutorials – Reinforce concepts through regular exercises, tutorials, and independent study. CLO10: Formative Assessment – Use quizzes, presentations, homework, and classroom activities to monitor student understanding.					
10- Course structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	week
	Explanation +	FUZZY SET	CLO1+CLO2	6	1-2

Daily and monthly exams and group discussions	discussion				
Daily and monthly exams and group discussions	Explanation + discussion	OPERATION FUZZY SET	CLO2+CLO3	6	3-4
Daily and monthly exams and group discussions	Explanation + discussion	FUZZY LOGIC	CLO1+ CLO2	6	5-6
Daily and monthly exams and group discussions	Explanation + discussion	ALPHA CUT	CLO3+ CLO2	6	7-10
Daily and monthly exams and group discussions	Explanation + discussion	CONVEX FUZZY SET	CLO3+CLO5	6	12-10
Daily and monthly exams and group discussions	Explanation + discussion	FUZZY NUMBER	CLO4	6	15-12
Daily and monthly exams and group discussions	Explanation + discussion	DISTINCE FUZZY MATHEMATICS	CLO5+CLO4	6	17-15
Daily and monthly exams and group discussions	Explanation + discussion	FUZZY ARTHIMIT	CLO6+ CLO2	6	20-18
Daily and monthly exams and group discussions	Explanation + discussion	FUZZY RELATION	CLO8+ CLO7	6	24-21
Daily and monthly exams and group discussions	Explanation + discussion	FUZZY FUNCTION	CLO9+ CLO7	6	25-28
Daily and monthly exams and group discussions	Explanation + discussion	FUZZY GROUP	CLO10+COL9	6	29-30

11- Course evaluation

The total grade is 100 points, distributed as follows:

- **40 points:** Coursework (assignments, participation, quizzes, midterm exam)
- **60 points:** Final Exam

12- Learning and Teaching Resources

- 1- Introduction of fuzzy mathematics
- 2- Introduction to Fuzzy set
- 3- مقدمة في الرياضيات الضبابية

1-3	2	CLO1+CLO2	Introduction to Educational Measurement and Evaluation	Lecture, discussion, course orientation	Class Activities
4-6	2	CLO2+CLO3	Concepts of Measurement, Assessment, Testing, and Evaluation	Interactive lecture, group discussion	Class Activities
7-9	2	CLO1+ CLO2	Principles and Purposes of Educational Assessment	Case studies, classroom activities	Class Activities
10-11	2	CLO3+ CLO2	Learning Outcomes and Test Planning (Table of Specifications)	Workshop, practical exercises	Class Activities
11-12	2	CLO3+CLO5	Construction of Objective Test Items (MCQs, True/False, Matching)	Guided practice, peer review	Class Activities
12-13	2	CLO4	Construction of Essay Tests and Performance Assessments	Workshop, assignment	Class Activities
13-14	2	CLO5+CLO4	Test Administration, Scoring, and Grading	Demonstration, practical activities	Class Activities
15	2	CLO6+ CLO2	Mid-Semester Examination**	Written examination	Midterm Exam
16-18	2	CLO8+ CLO7	Validity and Reliability of Educational Tests	Lecture, problem-solving exercises	Assignments
19-20	2	CLO9+ CLO7	Item Analysis (Difficulty Index and Discrimination Index)	Practical exercises using sample test data	Assignments
21-23	2	CLO10+COL9	Basic Statistics in Educational Measurement (Mean, Median, Standard Deviation)	Tutorials, data analysis	Assignments+ C Activities
24-26	2	CLO11+CLO12	Formative and Summative Assessment	Group discussion, case studies	Assignments+ C Activities
27-28	2	CLO12+CLO3	Alternative Assessment (Portfolios, Rubrics, Self and Peer Assessment)	Workshop, project work	Assignments+ C Activities
28	2	CLO11+ CLO9	Technology in Educational Measurement and Evaluation	Computer laboratory, online assessment tools	Assignments+ C Activities
29	2	CLO3+ CLO11	Student Presentations and Course Review	Seminars, revision activities	Project/Report
30	2	CLO12	Final Examination		

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	educational measurement and evaluation
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Main references (sources)	educational measurement and evaluation by dr.abdel sal jawdt
Recommended books and references (scientific journals, reports...)	educational measurement and evaluation
Electronic References, Websites	Magazines and newspapers

1. Course Name:					
Practical Education (Observation and Application)					
2. Course Code:					
Not specified					
3. Semester					
2026/2025					
4. Date of Preparation of this Description:					
2025/9/1					
5. Available Attendance Formats:					
Mandatory Physical Attendance					
6. Total Study Hours/Units:					
4 units					
7. Course Responsible Person's Name (if more than one name is mentioned):					
Assoc. Prof. Mahdi Alwan Aboud Al-Qurayshi Email: malwan@uowasit.edu.iq @uowasit.edu.iq					
8. Course Objectives:					
This course aims to: 1- Provide students-teachers with functional information to understand the meaning, importance, objectives, and types of practical education. 2- Assist students-teachers in clarifying and consolidating the theoretical principles of education, psychology, and academic courses studied in the college and applying them experimentally. 3- Help students-teachers understand their educational role from the observation stage to the individual and collective application stage. 4- Provide students with general instructions and guidance on the roles of teachers within the school.					
9. Teaching and Learning Strategies:					
Strategies: Strategy 1: Lectures Strategy 2: Analytical Scientific Discussions Strategy 3: E-Learning Strategy 4: Practical Application					
10. Course Structure:					
Week	Hours	Required Learning Outcomes	Unit or subject name	Evaluation method	Learning method

1-3	1	Understanding teaching methods and strategies	Importance of teaching methods for teachers, students, and subjects	Lecture	Discussion
4-6	1	Understanding teaching skills	Types of teaching skills, first session skills	Lecture	Discussion
7-9	1	Effective lecture techniques	Steps to deliver a successful lecture	Lecture	Discussion
10-11	1	Standard and inductive teaching methods in mathematics	Definition, steps, advantages, with practical examples	Lecture	Discussion
11-12	1	Feedback techniques	Definition, importance, sources, and types of feedback in mathematics teaching	Practical	Discussion
12-13	1	Active learning	Concept, importance, roles, and strategies	Practical	Discussion
13-14	1	Student presentation of active learning strategies	Analysis and discussion	Written Exam	Evaluation
15	1	Continuation of active learning strategy discussions	Further analysis	Lecture	Evaluation
16-18	1	Written Exam	Mid-term assessment	Lecture	Evaluation
19-20	1	Cognitive strategies in teaching mathematics	Concept and types	Lecture	Discussion
21-23	1	E-learning and mathematics teaching in the digital age	Modern techniques and integration	Lecture	Discussion
24-26	1	The relationship between mathematics instructors and students	Humanizing teaching approaches	Lecture	Discussion
27-29	1	Student assessment methods	Evaluation objectives, exam question guidelines	Practical	Discussion
30	1	Objective vs. essay-type questions	Features, drawbacks, and improvement suggestions	Lecture	Discussion

11. Course Assessment:

- Annual course assessment is out of 100, divided into:
- 40 marks for the course instructor divided according to the above mentioned components.
- 30 marks for the educational supervisor.
- 30marks for the scientific supervisor.
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12. Learning and Teaching Resources:

Practical Education

Required Textbooks (if any):